coincides with "stormy and humid weather caused by northern low-pressure systems" (Serventy and Whittell, 1948). The fact that records of this bird in the southern parts of Western Australia are all between October and April, with a maximum during January and February, seems to point to tropical cyclones as the main reason for the unusual displacement.

An exceptionally large number of these birds were seen by V. N. Serventy flying very high over Nedlands, just within range of strong field glasses, on Saturday, March 3, 1956, when strong north-easterly winds were blowing, preceding the arrival of a violent tropical cyclone the following day. The cyclone travelled along a peculiar track, which made it go over the Kimberleys twice, and then skirt the coast for nearly 1800 miles between February 27 and March 4. On March 4 the cyclone crossed the coast near Mandurah, and with it came thousands of Fork-tailed Swifts, many of them dropping to the ground in a dead or dying condition because of starvation.

The records thus show that although thousands of individual birds are affected, only a few species are involved, and so far there is no evidence of a permanent change in the range of a species through the action of tropical cyclones. The birds so exiled either return to their original areas or die in their new unfamiliar environment. Even an inveterate wanderer like the Tropic Bird does not readily spread to new localities which it may occasionally visit. *Fortuitous bird transportation* may be a factor in the colonization of new areas by animal species, but only if these new areas provide a favourable environment. Obviously enough, the south-western part of Western Australia cannot be favourable environment for the tropical species which are affected by tropical cyclones — even if some individuals survive the drought of the first summer after their transportation, the cold of the following winter is certain to prove lethal. *(To be continued)*

COMMON TERN *Sterna hirundo hirundo* IN WESTERN AUSTRALIA

by G. M. DUNNET, C.S.I.R.O., Nedlands.

On January 7, 1956, Mr. Kevin Reed of Bassendean picked up an exhausted tern on Coogee Beach, four miles south of Fremantle. It was banded with a Swedish band, number YK 2201, and was taken home where it died next day. The band was given to the writer who took steps to recover the body which had been buried. The body is now preserved in alcohol and is at present in the collection of the Wildlife Survey Section of C.S.I.R.O.

Advice from Sweden indicated that the band was placed on a nestling Common Tern *(Sterna hirundo hirundo)* on July 9, 1955, at Marum 21 km. ENE Norrtalje in the Swedish province of Uppland. This specimen had therefore travelled 13,000 miles (around the Cape) in six months.

This tern is a holarctic breeding species which migrates south in the northern winter. The species is split into several sub-species

but distinctions seem doubtful (Witherby *et al.* 1941). However, the race breeding in north-east Asia is *S. h. longipennis* Nordmann, and specimens of this race have been found at Cape York, Torres Strait, and Lord Howe Island (Hindwood 1944), and at Cairns (White 1946). There is no evidence that *longipennis* comes round the western coast of Australia though it is known to spend the northern winter around New Guinea and as far west as the Moluccas and the Malayan peninsula (Hindwood *loc. cit.*). The European form, *S. h. hirundo*, is known to winter down the west coast of Africa, Madagascar, and around the Arabian Sea (Witherby *et al. loc. cit.)*, but this is the first record from the continent of Australia.

In a recent paper Storr (1956) has noted the occurrence of the closely similar Arctic Tern *(Sterna macrura)* in the Perth area and has given a description of his specimen. In the field Common and Arctic Terns are not distinguishable in their non-breeding plumage so that it seems desirable to describe this specimen of the

TABLE 1

	Sterna macrura	*Sterna h. hirundo*	*Sterna dougallii*
Bill length	30.5* (30 - 33)§	34.4† (33 - 39)§	33.8 - 41.5‡
Tarsus length	16.0* (15 - 17)§	19.4† (19 - 21)§	19.0 - 21.1‡
Outer tail length	113* (170-200)§	113† (135-175)§	140 - 205‡
Wing length	263*	264†	192 - 210‡

* Storr's specimen.
† The Coogee specimen.
§ Witherby *et al.* 1941.
‡ W.A. Museum Nos. A5029 (Searborough 17/7/39), 7507, 7508, 7509, 7510 (Bedout Island, May, 1901) and 5102 (Pt. Cloates 22/1/99).

Common Tern so as to indicate the salient points of difference between the two specimens. A third medium-sized tern, the Roseate Tern *(Sterna dougallii)*, breeds on the Abrolhos Islands and has been observed as far south as Bunbury. A detailed description of this species is readily available in Serventy and Whittell (1951) but, in view of its similarity to the other two species, a comparison is given here.

Of the three species, only the Roseate can be identified in the field with certainty. It differs from the other two in that the outer tail feathers extend about an inch beyond the tip of the tail when at rest, and these feathers are all-white, with no black or grey. In flight the long outer tail feathers project like streamers (Serventy and Whittell 1952). In full breeding plumage, there is a delicate rose flush on the breast which is diagnostic.

In non-breeding plumage, in which they occur here, Common and Arctic Terns are indistinguishable except in the hand, and the best diagnostic characters are length of the tarsus and the bill which are shorter in the latter (Table 1), and the pattern of black

pigment on the inner web of the first primary (Fig. 1). In the Common Tern there is a broad (c. 3.0 - 3.5 m.m.) dark grey band along the inner side of the ramus, while in the Arctic Tern this is only about 2.5 m.m. and a much lighter grey. At a distance of 7.5 c.m. from the tip of the feather, this band measured 3.4 m.m. in the Common Tern and 2.4 m.m. in the Arctic Tern obtained locally.

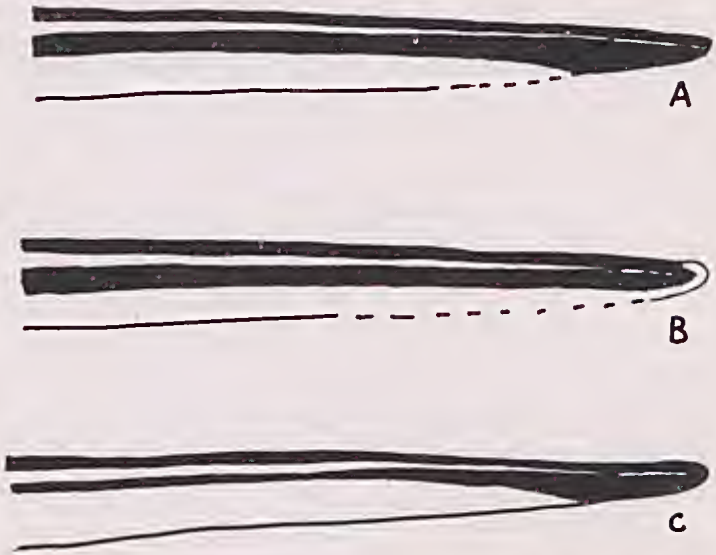

Fig. 1.—Pigment patterns (semi-diagrammatic) on the outer primaries of (A) *Sterna h. hirundo* from Coogee, W.A.; (B) *S. dougallii* from Bedout Island, W.A.; and (C) *S. maerura* from Swan River (Storr, 1956). At a distance of 7.5 c.m. from the tip of the feather, the widths of the black band on the inner webs are 3.4, 3.6 and 2.4 m.m. respectively. In the Arctic Tern the band on the inner web is lighter grey than on the outer, while in the other species both are a similar colour. In unabraded wings of the Roseate Tern the white extends round the tip of the feather as indicated, but in abraded feathers this character cannot be seen.

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I am very grateful to Mr. Kevin Reed for handing in the specimen of Common Tern which he was fortunate enough to find. Mr. G. Storr placed his specimen of Arctic Tern at my disposal and Mr. L. Glauert kindly allowed me access to the collection of Roseate Terns in the W.A. Museum.

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